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ABSTRACT

One of a series of Australian publications on social studies skill development, this booklet helps secondary students develop their communication skills. Following notes to the teacher, the booklet is divided into seven chapters. Chapter 1 provides students with an introductory topic and activities for preparing a visual presentation of that topic. Chapter 2 focuses on preparing written presentations. Several activities illustrating ways in which graphic drawings can simplify the presentation of complex material are contained in chapter 3. Chapter 4 examines various types of graphs and their uses while chapter 5 contains application activities for developing graphing skills. Suggestions for giving oral presentations are provided in chapter 6. The final chapter discusses types of three-dimensional and display presentations. The publication concludes with a list of useful resources. (LP)

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PRESENTING INFORMATION

Social Science Skills Book 4

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 Curriculum
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Centre
Canberra
Australia

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foreword

Although the nature of social science courses and social science teaching in Australia has changed significantly over the past decade, there still remains a rather undue emphasis on the teaching of factual information. This has generally been to the detriment of the achievement of other social science aims and objectives. More recently, however, there has emerged a growing concern for the achievement of these other aims such as the development of skills, and the growth of positive attitudes and values.

In recognition of this, the Curriculum Development Centre is publishing a series of booklets to assist teachers in the area of skill development. The booklets are practical and provide background to specific skill areas, guidelines for programs to develop such skills, and a wide range of student activities which can be readily incorporated into existing programs.

The titles in the series are as follows:

- 1 **Teaching Social Science Skills**
This provides teachers with a broad introduction to the area of skills development and the implications for classroom teaching.
- 2 **Finding the Facts**
A booklet designed to provide students with skills relating to data collection through the use of the library, media, and the local community.
- 3 **Social Survey**
As the title suggests, this booklet shows students how to use survey techniques and explains their contribution to gathering data in the school and community.
- 4 **Presenting Information**
This booklet outlines to students different methods for getting the message to the audience.
- 5 **Assessment and Evaluation**
This provides teachers with a simple introduction to assessment and evaluation in the social sciences.
- 6 **Working in Groups**
This booklet provides teachers with guidelines for effective organisation of student groups in the classroom.

We believe that these materials have a much wider learning and teaching application than the series title nominates. Indeed, it will be surprising if the booklets do not become an essential resource in teacher development activities.

Their appearance is timely and they will, we are sure, be well received.

DAVID FRANCIS
Acting Director

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TEACHERS INTRODUCTION

Perhaps the most neglected social science skill is **presenting information**. Only recently have materials, such as those produced by the **Visual Education Curriculum Project**, become available to provide teachers with guidelines for developing student interest and ability in this area. The traditional forms of the essay and the 'project chart' are no longer adequate methods of conveying information often generated in a variety of forms: spoken, written, numeric, symbolic, diagrammatic and pictorial.

Ideas, or sets of data can be communicated more effectively if the methods of presentation are appropriate to the purpose: **timelines** to illustrate a sequence of events, **graphs**, to show percentages or growth rates, **flow charts** to indicate stages, and **photographs** to convey emotion.

Whatever the degree of creativity innate in the students, it is possible to improve systematically students' skills of communication within existing social science programs. This booklet aims to help students broaden their awareness and understanding of alternative methods of presenting information; explore and practise those skills necessary for effective communication of information; and develop an appreciation of the need for effective and well-organised methods of communication to different audiences. To achieve these aims, exercises in this booklet relate to:

- written presentation
- graphic presentation
- oral presentation
- three dimensional presentation

The exercises are practical and designed to establish familiarity with various forms of presentation and to explore their potential uses. They should be regarded as **introductory** rather than comprehensive and it is hoped that teachers will see the activities as models or guidelines to develop other tasks. The activities are graded so the first section is usually extremely simple and could be passed over. There is, however, a danger that students may miss the point of the following exercises if they take for granted the facility of the first ones.

developing student skills in presenting information

Do you recognise these tales of woe?

“These assignments will take ages to mark and they all look the same!”

“Hey Sir, when will we get our assignments back?”

“It's not fair everyone in the group got a 'B', but I did all the work.”

Two basic assumptions underlie the above situations; the teacher is the audience and the motivation is provided by the mark. While it is often denied that these assumptions are true, in many cases the pressures of assessment programs and the school environment generally ensure that they apply.

the audience

When students assume the teacher is the audience they are likely to limit their endeavours to what they know will please, depend heavily on the speed and quality of marking, and remain stereotyped in their presentation of work. Many teachers may not be concerned at the last result if research tasks had been carried out effectively. The skills of presentation and research, however, are complementary. Lack of emphasis on presentation skills, in the secondary school in particular, has robbed many activities of the impact that the exercise of research skills could have provided.

Teaching presentation skills and providing a varied and extended audience can give purpose to an assignment, and provide a vital and varied form of assessment. If research reveals interesting findings, these are worth communicating. The capacity to communicate effectively those findings to the appropriate audience (not always the teacher) can bring a sense of purpose and a feeling of real achievement. Fortunately, a school can provide the student with a variety of audiences:

a variety of audiences:

- the small student group (chosen by the presenting student)
- the large student group (whole class)
- the different class level groups
- the whole school
- the parent group
- the teacher/s (the principal)
- an outside body

the motivation

The **desire to communicate** is a very powerful motivating and reinforcing factor and the growth of communication skills is enhanced by critical evaluation of a student's work by others. Such feedback is particularly important in the planning and writing stages of a task — certainly more helpful than 7/10 at the bottom of the last page.

imparting the skills

- You don't see yourself as having the skills necessary to venture too far into the area of information presentation skills?
- You are not artistic and neither do you see much value in students spending time 'prettying up' their work?

The most powerful intellectual skills available to the teacher are the abilities to organise, to simplify, to see relationships, and to synthesise the several parts into an organic whole. Students often cannot see the forest for the trees. The teachers' more highly developed abstract thinking ability and previous experience provide them with the expertise to assist students present a unified and coherent report of their research findings.

Another aspect in which teachers can provide assistance to students is in deciding the form of presentation most appropriate to the ideas or data in question. Teachers also have the ability to describe and analyse the task in hand and to encourage students to communicate effectively by helping them feel that there is something worthwhile to communicate. They should be helped to understand what they want to communicate, to know why they want to communicate, and to appreciate the nature of the audience.

Knowledge of the purpose of their assignment should encourage students' awareness of the need for research, organization and relevance. The skill of **organising** information, for instance, remains nebulous without the spur of an audience to be informed. Consciousness of the need to **select** material from a variety of sources according to the objective in mind, and then to **organise** the data into manageable and stimulating segments, is greatly increased when the teacher provides intellectual leadership.

presentation

Whether the means of communication is written, graphic, oral, or a combination of these, there should be a balance between unity and diversity, and a balance between attractiveness and effectiveness.

written presentation

This skill is much abused and much underestimated. For instance, skilful wording of a title and sub-headings, insertion of thought-provoking questions, highlighting of key words or phrases, and intelligent labelling of maps and diagrams can make an otherwise lifeless assignment very impressive. Exercises in this booklet are designed to teach the students to present written information more effectively.

graphic presentation

Often a greater impact can be achieved by a combination of graphic symbols and written words than by a lengthy written explanation. If the graphic communication is thoughtfully and carefully prepared, it will draw the audience to the message and thus achieve the communication aim.

These graphic elements should be considered during the preliminary design of chart layouts, to ensure that the selection of the different elements of information is arranged according to a number of separate visual planes, each element being considered in relation to its visual importance. This approach will ensure that the final presentation makes sense, and that the objectives and major items to be communicated are clear.

oral presentation

A rewarding, but time-consuming, means of presentation is the oral report possibly accompanied by illustrations or a tape recording. Indeed, the development of oral expression should be an integral part of all programs, providing students with the opportunity to express themselves in discussion, debate, lecturette, interview and reporting. Often tape recordings and other technological devices are used to avoid more appropriate methods of communication which may involve more time, thought, and preparation. Tape presentation should only be used if students can suggest significant advantages.

three dimensional presentation

Many students are keen to make models of items of interest to themselves, and perhaps this skill could be more widely used. Particularly in the first stages of secondary school, the model is a very valuable visual and utilitarian method of examining such subjects as settlement patterns, landforms, the structure of industrial complexes, and transport networks. Three dimensional graphs and time-lines can also provide interest and variety to an assignment.

organising student research activities

At the beginning of the assignment the **criteria** for the successful completion of the **research and presentation** should be **negotiated** with the students. The agreed

criteria should be displayed prominently or a written record of the agreement could be kept for each group (or individual) in the form of a 'work permit'.



WORK PERMIT

THE OFFICIAL SEAL OF THE COUNCIL
AS REQUIRED BEFORE COMMENCING
INFORMATION PRESENTATION

THE FOLLOWING ITEMS

HAVE	BEEN APPROVED
HAVE NOT	

- | | |
|------------------------------|--------------------------|
| 1. OBJECTIVES | ☐ |
| 2. RESEARCH | ☐ |
| 3. ORGANISATION | ☐ |
| (a) Developmental sketches | ☐ |
| (b) Title | ☐ |
| (c) Sub-headings | ☐ |
| (d) Final preliminary layout | ☐ |

ISSUED IN COUNCIL ON THE _____ DAY OF _____
IN THE YEAR _____

ISSUED TO _____

FOR THE COUNCIL

materials

It is often thought that expensive materials are necessary for the production of display work. On the contrary, good results can be achieved through the use of simple items such as pens, ordinary and coloured pencils, 'texta' colours, plain and coloured paper, scissors and paste. Used cardboard cartons can often be used in three-dimensional work.

and just to refresh your memory, you've obviously thought of

audio tapes
bulletin boards
calendars
cartoons
chalkboard
charts
collages
diaries
dioramas
directories
essays
exhibitions
film
flannelboards
flowcharts
graphs
lecturettes
letters
logs
maps
models
mobiles
mock panels, broadcasts
and telecasts
montages

newsletters
overhead projector
transparencies
photographs/photostories
posters
reports
retrieval charts
role play
scrapbooks
slides
time-lines
video

(an unfinished list of vehicles for
presentation of information)

A PREVIEW

a topic to tackle

As an individual or as a member of a group, you are asked to undertake a study of one or two aspects of:

'MINING IN AUSTRALIA'

At first glance this might sound boring and you may have done something similar before, but you could be surprised at how interesting such a task might be. There are many different ways of looking at this topic and many different ideas that can be conveyed to other people.

take a new look at things

The following activities may, at times, appear strange to you. They will often require you to do things that you have not tried before; they may ask you to adopt new ways of thinking and new ways of looking at things. Above all, you will be asked to look at your own ways of doing things through someone else's eyes.

hard work — don't waste it

Have you ever thought about the amount of time that you have spent on a particular project and then found that no one has taken much notice of it? By carrying out the tasks in this booklet you will come to see that by learning a few simple skills you will be able to produce assignments that will attract and hold the attention of even the most disinterested people.

obtain some feedback

As you do the exercises, keep these ideas in your mind:

- if some issue is worth researching it will leave you **something to say**,
- if you have something to say there must be **someone to say it to**,
- if there's someone to say something to there must be **some way to say it**.

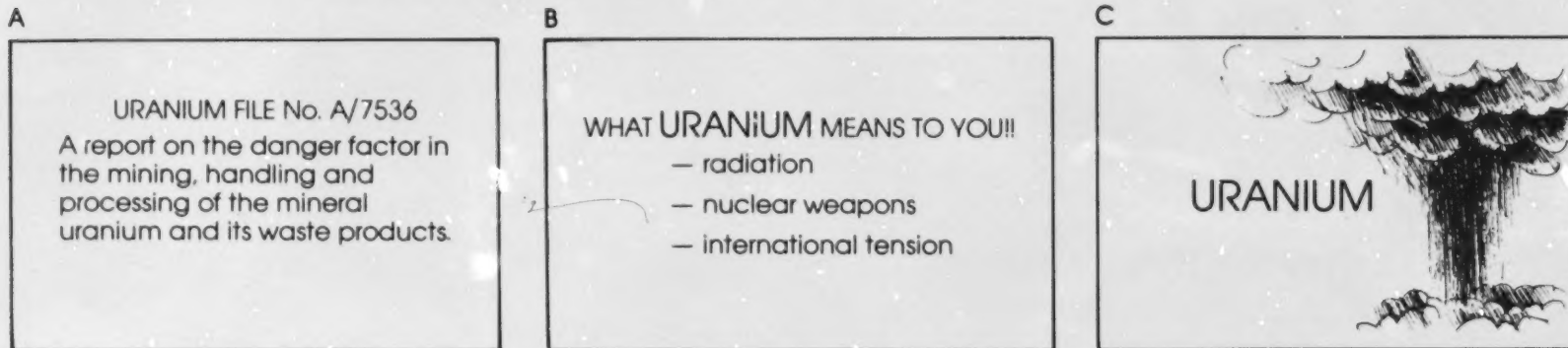
Thus we have

- a MESSAGE
- an AUDIENCE
- a METHOD

activities

- 1 Below are illustrations of the front covers of three different documents. Study these closely and observe the three different **methods** that are used to convey what is essentially the same **message**.

- What are the major differences between each of the methods?
- What sort of audience is each method directed towards



- 2 Draw two maps of your state or territory and **without using any words**:
- show on your first map that the state or territory is making rapid progress; and
 - on the second map, show that the north-west corner of the state or territory is the best place to live
- 3 Reproduce one of your maps in a larger scale and with a bold style so that it can be seen from the back of the classroom.
- 4 The class might now vote on which of the maps produced by the class members **achieves its purpose** most effectively.

THE WRITTEN WORD

The written word is the first and most common method of presenting information. Many students often complain about having to do written assignments, but even when other methods could be used many are likely to still choose to present information in essay form.

There are many ways to improve your use of the written word but there are two things which should be always kept in mind:

- The written word can have a very powerful effect.
- Your purpose is to arouse interest, maintain interest, and to inform the reader.

activities

- 1 'Mining in Australia' is a very broad topic. To make things more manageable and purposeful it is sensible to look at one aspect of the topic, and try to show the reader that life in a mining town is very comfortable.

Creating a title — the title is vital!

Remember what you are trying to prove to the reader but an eight-word title that doesn't sound very exciting certainly isn't going to capture much attention. The type of title that is needed is one which will attract interest and yet still give the reader a reasonable idea of your topic.

- Look at the following headings and choose the one you think would be the best for your purpose:

THOROUGHLY MODERN MINING
MINING AIN'T WHAT IT USED TO BE
MOD-CONS MINING

- Make up a better title of your own
- Try the same tasks using the following information:

TOPIC: Mining in Australia

AIM: To show that Mining is harmful to the environment.

Some suggested titles:

THE EFFECTS OF MINING
MINING THE MONSTER
MINING MEANS MESS

Do these headings
give you any idea
you could use when
writing your
assignment?

What other ideas or
aspects of mining
can you think of that
might be discussed?

The title can also be highlighted by giving careful thought to the size and style of the letter forms. Since the title is a brief description of the material that follows, it should stand out from the rest of the text. For this reason the letter forms are often in CAPITALS as shown above. Sometimes a single contrasting colour can be used to block in the letter forms which will also help your title to attract attention.

These suggestions can also be helpful when you are making up a wall chart.

Another point that might be helpful - the size of lettering for your sub-headings should be smaller in size than the letters used in the title but larger than those of the written text.

- 2 Once attention has been captured by your interesting title, you must make sure that the reader has **something to look forward to**.

Remember the aim that you started out to prove: 'Life in a mining town is very comfortable.' Below is a list of the types of information that you might have gathered from your own research into a particular mining town:

- air conditioning
- house rentals
- hotels/motels
- salaries
- food supplies
- temperature
- rainfall

- Write down those of the following sub-headings that you would be able to use in your assignment:

Climate

Accommodation

Provisions

Recreation

Power Supply

Home Comforts

- Now try and write down some sub-headings that sound more interesting than the ones above. Here are a couple of suggestions:

'No sweat — just a flick of the switch'

'There's no place like home — even out here'

- 3 With your title and sub-headings decided, it is important to realise that each page of writing also needs a good layout. Neatness is important and use every possible means to capture and maintain your reader's interest. Good layout helps the reader to easily follow your discussion without being confused.

Read the following paragraphs about the mining of bauxite, the raw material from which aluminium is made. Then do the following exercises.

Why not display all the sheets on the wall so that the most effective ones, not necessarily the "prettiest" can be chosen and commented upon?

However, Comalco believed these problems could be overcome and an industry developed which would prove beneficial to Australia. The company built a modern town to accommodate the mining amenities such as a shopping centre, schools, a hospital, specially designed houses and flats, and sporting facilities, such as tennis courts, swimming pool and a golf course.

In order to transport the bauxite from Weipa, Comalco built what has become the world's largest bauxite shipping port. At present up to 11.2 million tonnes of bauxite a year can be shipped from Weipa.

In addition to being rich and plentiful, bauxite at Weipa is fairly easy to mine. It is found in the form of small red pebbles beneath a layer of topsoil which is usually only a metre thick. After the topsoil, which is called overburden, is removed, the bauxite is scooped up by large front end loaders and loaded in trucks or rail wagons for transport to a processing plant. The trucks can carry up to 85 tonnes and each rail wagon carries up to 100 tonnes of bauxite at a time.

- Choose an aim (the main general thought that you wish to get across to your reader).
- Make up a title that is both attractive and appropriate to your aim.
- Make up attractive and appropriate sub-headings.
- On one page of notepaper use your title, sub-headings, and the information given above, to convey your aim to the reader as effectively as possible. You may wish to use some simple illustrations to aid your written work.

A CHECKLIST FOR YOUR WORK

- Have you given your reader any questions to think about?
- Have you hinted at any highlights or special features that the reader will encounter when reading your page of information?
- Have you made your work easy to read?
- Have you underlined a couple of key words or printed them in capitals? (Don't overdo this technique.)
- Are you happy with your work?
- Could you have improved it in any way?

something to think about

So far we have been talking about written presentation. Look at the drawing on the right. It is a tree diagram showing the changing lifestyles resulting from the establishment of great merchant companies during the reign of Queen Elizabeth I in England — and the many goods from all over the world which were brought into England for people to eat, drink and use for entertainment.

- What advantages does this type of presentation have?
- Do you think a reader would have enough information without written text?
- On a sheet of notepaper, write two or three paragraphs describing the changes you think might have taken place in England at the time. Remember, you will need an interesting **title** and appropriate **subheadings**.



'Life in the Seventeenth Century'

P. Moss 'History Alive: Vol. 7'. Granada Publishing Ltd.

GRAPHIC SKILLS

As you saw in the previous exercise, presenting information in a visual form has many advantages (consider the difference between information conveyed by radio and that conveyed by television). Indeed, by using drawings, sketches, diagrams and photographs information can be easily presented so that it is interesting, clear and easy to understand. It is also very effective when combined with the written word.

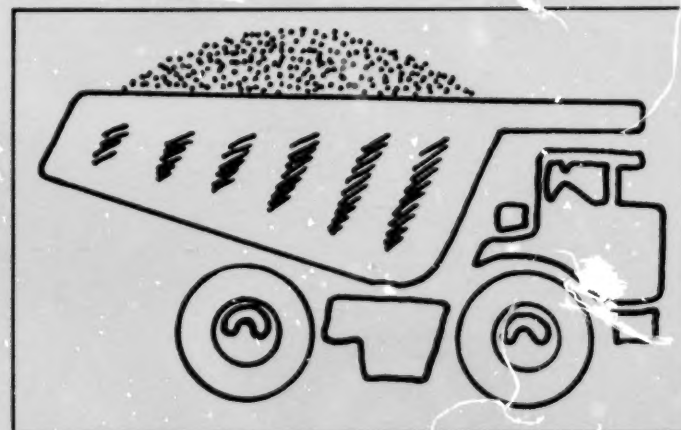
Many people often think that to use visual presentation they have to be an artist or be very creative. This is not always true. If your purpose is to put across a message, then in most cases you will not need to give a detailed and accurate drawing to convey your meaning. For example, if you are discussing the transport of minerals by train or truck, then your illustrations need not be exact detailed copies of a train or a truck. As long as your reader can grasp the fact that you are talking about those forms of transport, and if your drawings or diagrams have succeeded in attracting attention then they have served their purpose.

The use of graphic skills can help you do many new things, and the following activities can assist you to understand and use some of these skills.

graphic skills
can help you
to simplify

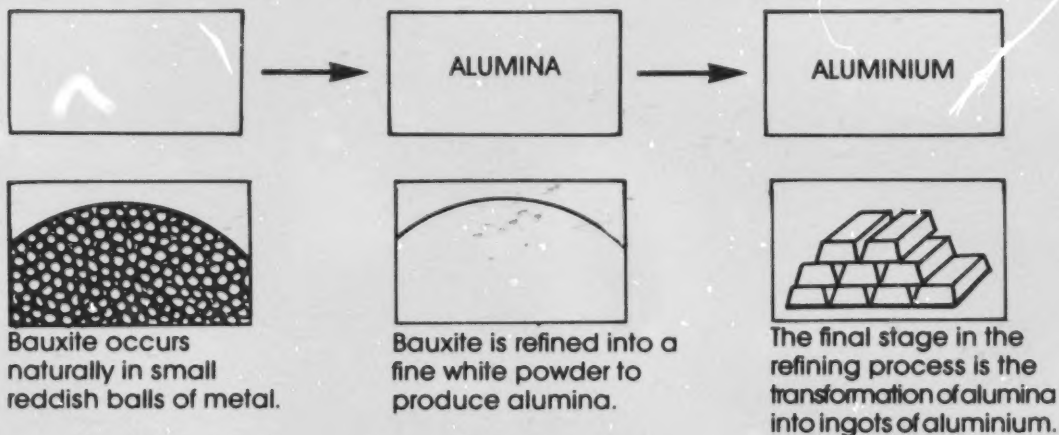
activities

- 1 Your purpose is to show that the trucks being used in mining have changed and increased greatly in size over a period of years. Which of the following two trucks will you use? State the reason for your choice.



- 2 Now, using nothing but straight lines, circles and semi-circles and using outline shapes only, draw an example of a train carrying many thousand tonnes of **iron ore** from the **mine** to the **port**. Time limit: ten minutes.
- 3 The same technique can be used to indicate **ideas** as well as physical objects. Repeat the previous exercise but this time, by altering the angle of the train and by adding faint lines here and there, indicate that the train travels at great speed.
- 4 Remembering that our **purpose** at this stage is to learn to **simplify** the presentation of information, let us now turn to the business of processing raw materials into their end products. It is very easy to show the different stages in a process by means of a flow diagram.

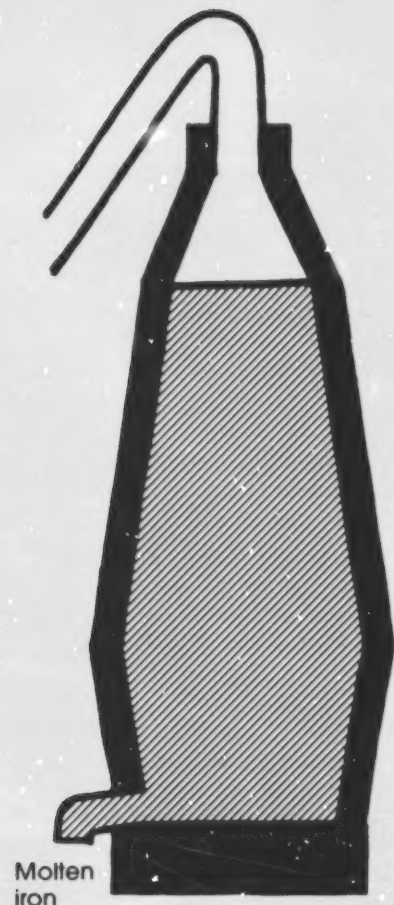
Form a group of no more than three students. Examine the following flow diagrams. After you have looked at them carefully, copy them onto a sheet of notepaper, fill in what is missing and add anything that you think might help to attract the interest of the reader (for instance, in the second diagram you might use a square of dark coloured paper and colouring pencils to achieve your aim).



Flow diagrams like this help link a sequence of activities into an orderly visual arrangement. Although highly simplified, it is one way in which complex relationships can be visually linked. Words are not always used in flow diagrams. Sometimes symbols are used to stand for the word or words. At other times both words and symbols are used, one helping to explain the other. In all cases, the aim is to provide a quick and efficient method of communicating information or an idea.

- 5 Even flow diagrams can be complex, especially if they are showing a complicated or lengthy process. In such cases, to properly understand the whole process, it might be necessary to even further simplify a diagram.

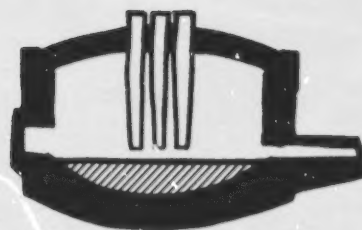
Still working in your group, examine the following flow diagram which summarises the processes of steel-making from the raw materials to the various finished products. On a sheet of paper, try and simplify this diagram even further. Remember, your aim should be to present the main ideas or stages of the process as simply as possible.



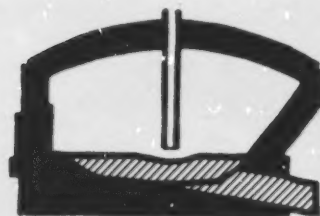
BLAST FURNACE

Iron making

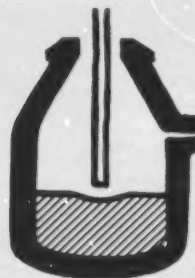
Iron ore, limestone, and coke are heated in blast furnaces to form molten iron.



ELECTRIC ARC FURNACE



OPEN HEARTH FURNACE



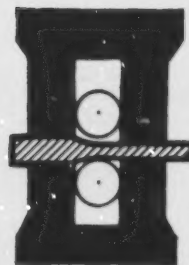
BASIC OXYGEN FURNACE

Steel making

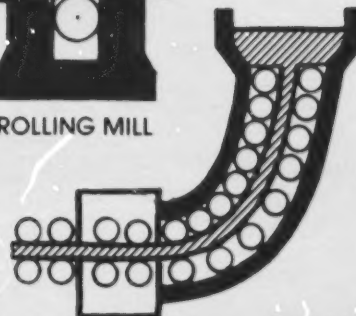
Impurities are removed from the molten iron and scrap steel to produce pure steel. Open hearth furnaces and basic oxygen furnaces refine a mixture of molten ore and scrap steel. Electric arc furnaces make steel from scrap.



INGOTS



ROLLING MILL



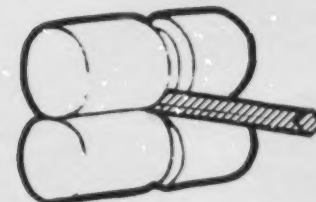
CONTINUOUS SLAB CASTER



Billets Blooms Slabs

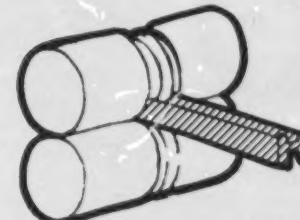
Semi-finished steel

Semi-finished steel is formed in two ways. The molten steel can be poured into moulds to form ingots which are then sent through rolling mills to be shaped into 'billets', 'slabs', and 'blooms'. The other method is called 'continuous casting'; the molten steel is cast directly into slabs.



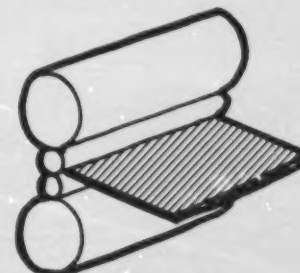
RODS, WIRE AND BARS

Automotive parts, nuts and bolts.



STRUCTURAL SHAPES, BEAMS, RAILS

Buildings, bridges, ships, machines.



PLATES

Ships, pipes, storage tanks, automotive components.

Shaping the steel

Billets are used to form rods, wires, and bars. Pipes and tubes are shaped from slabs, and structural shapes and rails are formed from blooms.

- 6 Just as the previous exercise was aimed at simplifying a complex diagram into one which is more easily read, the purpose of this task is to simplify a piece of written description. Your aim is to provide a visual summary of the information, not to provide detailed and complicated diagrams.

NOTE: You will probably need to use a few words in your final diagram. The choice of words or symbols will depend on which is most suited to your purpose.
You may also wish to use shapes that are more suited to the nature of the materials. Is a square the best shape for your processes? How many stages will you have?

To the right is a description of the processing of bauxite into aluminium products. As far as possible summarise the description using illustrations and graphic techniques, first as a rough copy and then on a large sheet of paper so that it can be displayed on the wall. Other groups in the class may wish to select the most effective presentation. You might also like to display your rough sketches so others can see how your ideas were developed.

- 7 Remembering that the **method** used to convey information must always be consistent with the nature of the **message** and of the **audience**, consider the following:

Audience: a very vigorous group of conservationists

Message: the Z.B.D. Mining Company is concerned about the environment

Analyse the information contained in the three statements below and, using the most effective method possible, show the relationships between the three separate processes. Your message should indicate the relationship.

• **Statement 1**

Plants have sophisticated emission control equipment. Huge dust collectors cleanse gases before they are dispersed through a high stack.

• **Statement 2**

Aluminium cans are collected and reused. They are crushed, remelted, and the metal used to make new products.

• **Statement 3**

Mining is carried out in sections. When mining has been completed in a particular area, the surface is prepared for future replanting.

At the processing plant the bauxite is crushed, sieved through large vibrating screens and sprayed with water to remove dust and clay particles.

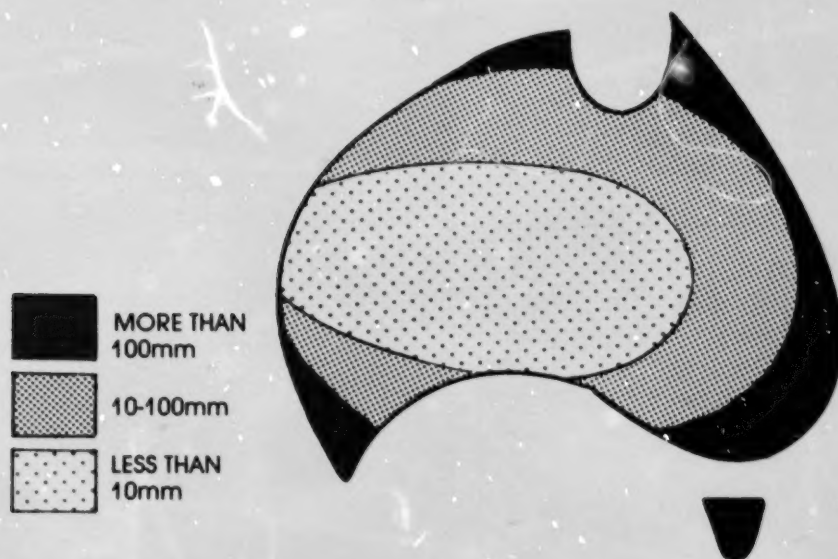
Bauxite from Weipa is shipped to processing plant in Australia, Japan, and Europe.

Refining of bauxite is an intermediate stage in the production of aluminium metal. In this process bauxite is dissolved in caustic soda to remove impurities and to separate the aluminium oxide contained in the bauxite. By the end of the refining stage, bauxite has been changed into a fine white powder — aluminium oxide or alumina. This is stored under cover before shipment.

Alumina is composed of aluminium and oxygen. To produce aluminium metal it is necessary to separate these two elements using electricity. This process occurs in electric furnaces called reduction cells or pots. Molten aluminium is removed from the reduction cells and cast into ingots. Aluminium produced at smelters is taken to semi-fabricating plants to manufacture a variety of finished products. Examples of products manufactured from aluminium are tankers, roofing and siding sheet, cans, windows and doors for private and commercial buildings, partitions, decorative screens, components for truck and railway wagon bodies, yacht masts.

- 8 The previous exercises will give you an idea of some ways in which information can be simplified. There are of course other forms of information that can look very forbidding in written form. Maps are a very familiar form of representing information visually. If you consider how you would describe in words a representation of the world's geography. It would be a lengthy and perhaps impossible task.

Even maps can be simplified, both for visual effect and is also to save time. For example, look at the map below. While it is certainly not an accurate outline of Australia, it is obvious that it conveys the message (the distribution of rainfall) very simply and very effectively.



AUSTRALIA: RAINFALL

(See What I mean: Visual Education Project p. 48)

Consider this stylised map of the world and the set of figures which shows the destination of Australia's mineral exports. Copy the map onto a piece of notepaper, and by using arrows of different thickness (the thickness should indicate the appropriate proportions), show where Australia's mineral exports are sent. Give your map a title.



Use the library to find out the goods and raw materials which are imported into Australia and the countries from which they are brought. Draw a similar map to the one above. What do the two maps tell you about Australia's pattern of trade?

graphic skills can help to clarify

- 9 We have seen how the use of certain graphic skills can simplify a mass of data for particular purposes. Such skills can also clarify what might otherwise be confusing information. Lists of figures for instance, often mean very little until we decide what use we wish to make of them, and then choose the most effective means of making them clear to someone else.

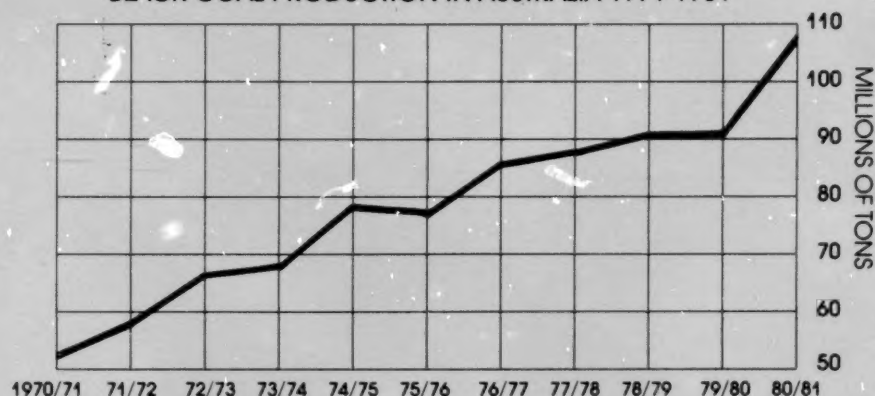
Below is an example of the same information (black coal production in Australia during the period 1964-1981) presented in two different forms: in a table of figures and as a graph.

BLACK COAL PRODUCTION, AUSTRALIA (million raw tonnes)

	N.S.W.	Queensland	Australia
1970-71	35.719	14.323	52.968
1971-72	36.963	19.009	58.855
1972-73	38.060	25.269	66.191
1973-74	36.632	27.146	66.583
1974-75	42.306	32.097	78.211
1975-76	40.590	32.402	77.129
1976-77	46.785	34.657	85.910
1977-78	49.254	34.138	87.790
1978-79	50.517	37.253	91.901
1979-80	48.710	36.528	90.198
1980-81	58.292	42.755	106.199

Source: Joint Coal Board

BLACK COAL PRODUCTION IN AUSTRALIA 1971-1981



From either of the two forms a reader could find out such facts as the amount of black coal produced in a certain year or during the whole period, and whether production had fallen or risen during the period.

However it is obvious that there is a visual difference between the two forms of presentation. Which do you think is the better form of presentation, or do they have totally different purposes?

On a sheet of paper, write down the advantages and disadvantages of each form of presentation. You might need to discuss this in a group to obtain different ideas. Consider the following questions:

- Where might it be better to use the graph rather than the table? Where might the table be more suitable?
- Which is the more detailed and accurate?
- Which is the easiest to read if you wished to find out about changes over time?

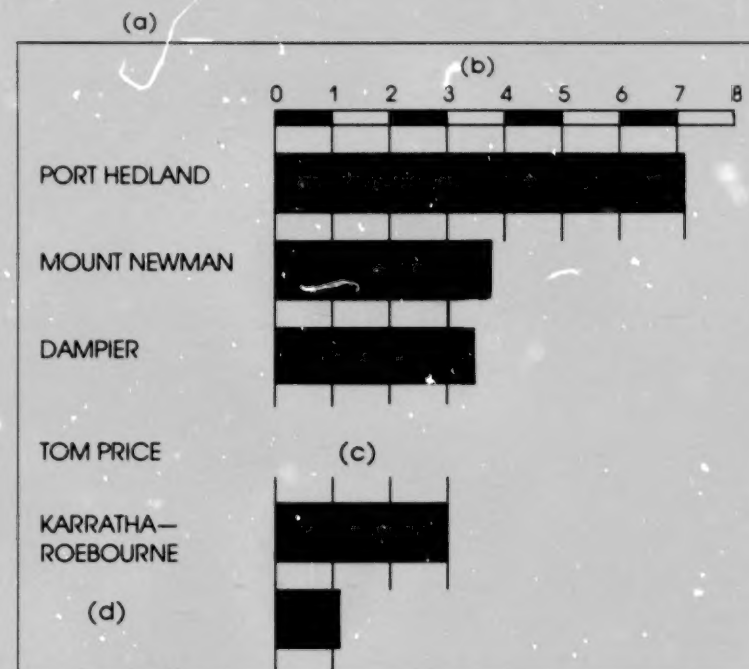
- 10 The following set of data can be used to emphasise several different things. When you have looked at the figures, read the statements below them.

POPULATION FIGURES — NORTH-WEST MINING CENTRES			
Centre	Actual Population 1971	Estimated Population	
		1980	1990
Dampier	3558	3000	3000
Karratha-Roebourne	3218	17000	29000
Port Hedland	7172	22000	26000
Tom Price	3310	3000	4000
Goldsworthy	1020	600	600
Mount Newman	3889	7800	9700

(i) In 1971 Port Hedland and Goldsworthy were the largest and smallest of these mining centres respectively.

(ii) Three of these mining centres are expected to grow significantly.

Copy the following graph which is a visual means of representing statement (i) above. Fill in the missing information — a - d.

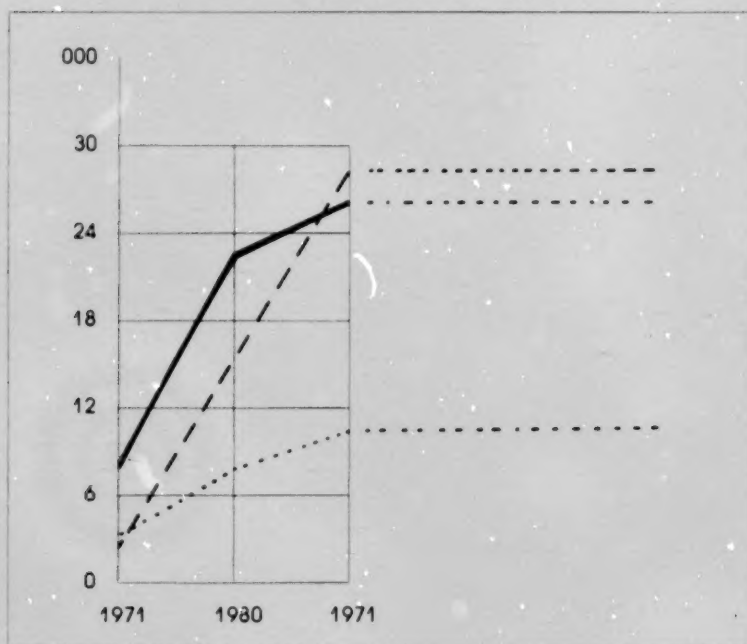


Because the way the graph is drawn, what information is in the Table of Population figures but not shown in the graph?

It is possible that you are one of the many people who forgot that every detail of a properly drawn graph is vital — yes, even the labels. The line graph that represents statement (ii) — North-West Mining Centres — fails to provide the reader with some vital information. Your task is to copy the graph and provide the missing information.

Look back at the statements made about the North-West Mining Centre population figures. Make two new statements based on the figures and then construct your own graphs which will reveal the information clearly in a visual form. Before you do this read the following section which may help you in drawing your graphs.

NORTH-WEST MINING CENTRES - SELECTED POPULATION PROJECTIONS TO 1980 AND 1990



GRAPHS — DIFFERENT TYPES AND DIFFERENT USES

In the previous exercise two different types of graphs were shown, each giving different types of information. A graph is a simple and effective way of communicating and presenting information. Some advantages of using graphs include:

- They make data easy to comprehend, usually by condensing information into one diagram.
- They make it possible to see relationships between different items.
- They help the reader to easily see trends occurring in data.

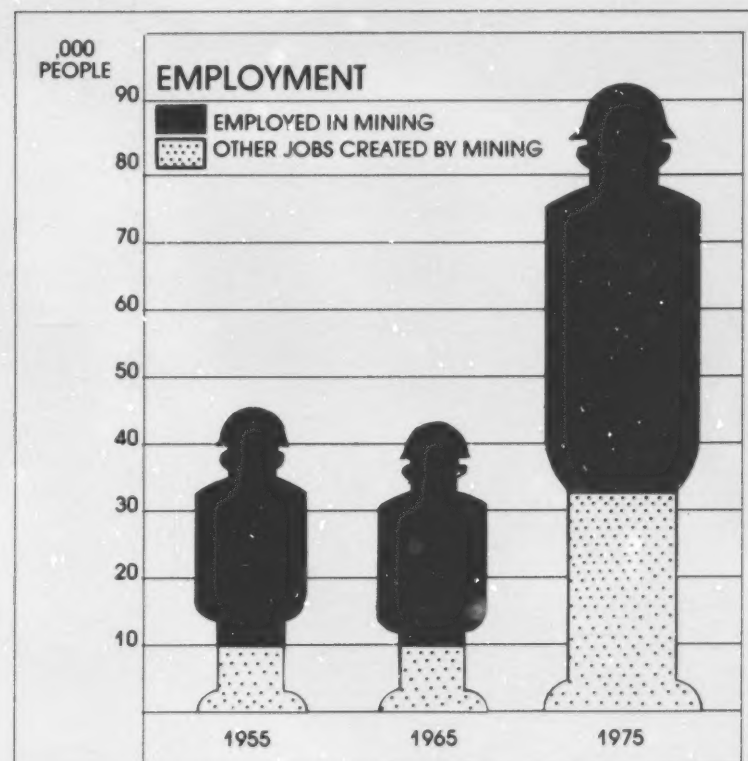
This section aims to examine the most common types of graphs that are used in the social sciences, to show how they can be used, and to set out some guidelines for drawing your own graphs using different types of information.

Some of the most common types of graphs which can be used are as follows:

pictogram (pictograph, pictorial graph)

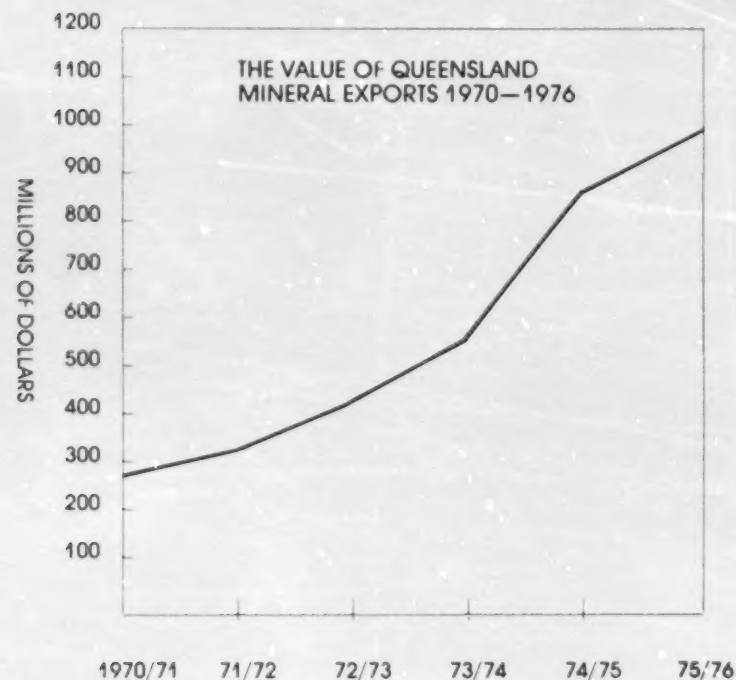
The pictogram uses picture symbols in a line to represent the items being compared. It is an eye-catching graph and when the symbol is well chosen it is particularly suitable for one-to-one comparisons. Difficulty in reading pictograms may occur if the symbol does not communicate its meaning.

The example shows the figure of a miner to indicate the growth in employment as a result of growth in the mining industry.



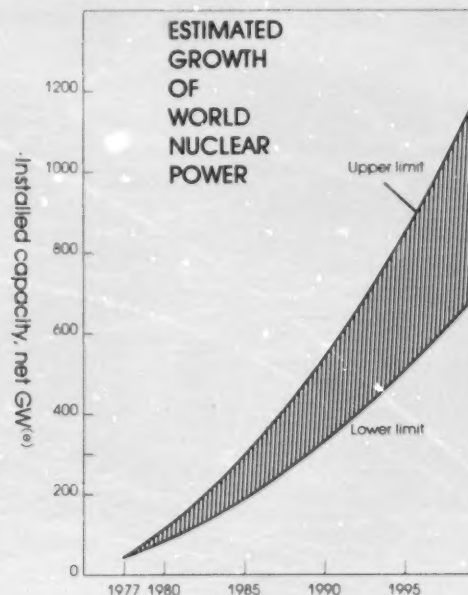
line graph

The line graph is a simple and effective method, especially suited for showing change over a period of time. An example of the line graph was shown on page 22; it showed the production of black coal in Australia 1964-1981. This graph is constructed along two axes with time always being shown on the horizontal axis and the quantity of the items being shown on the vertical axis.



Using graph paper makes drawing graphs much easier and much more accurate.

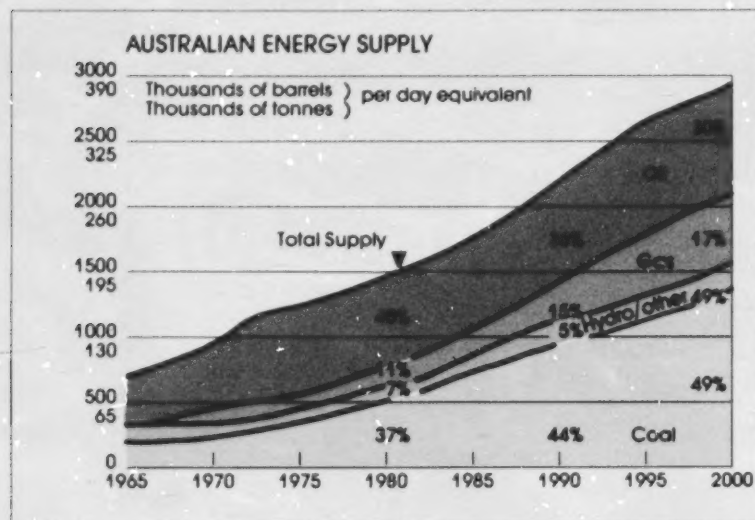
Line graphs are very useful for comparing two sets of data and showing **trends** in one or more categories of that data. The following example of a multiple line graph shows the estimated growth of world nuclear power up to the year 2000. The difference between the upper and lower estimates is further highlighted by shading the area between the two lines.



(Visual Education Curriculum Project 'Do You See What I Mean' p. 36.)

Note the very clear titles

A great deal of information can be shown by using the multiple line graph as long as the graph does not become too cluttered; this often happens if the lines overlap. A good example of how comparisons between several different items can be clearly shown as seen in the multiple line graph below:



bar graph (column graph)

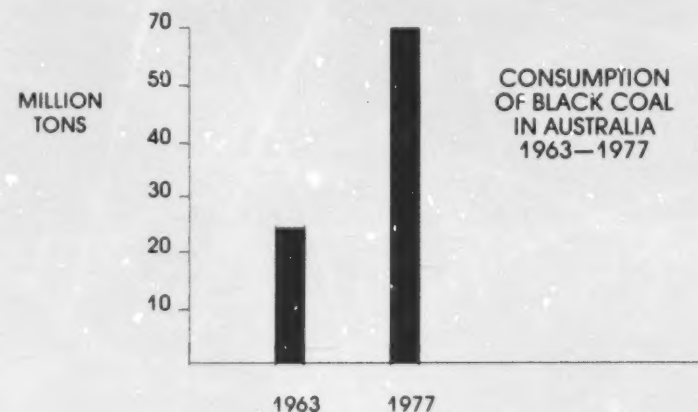
The bar graph is closely related to the line graph; it is easy to construct and is useful for the comparison of statistical data. The following points should be noted when drawing bar graphs.

- The bars can be vertical or horizontal.
- They can be divided or placed on either side of a central axis.
- The width of the bars should be kept constant.
- It is best to keep each bar separate from its neighbour.
- The use of colour or shading greatly helps their effectiveness.

There are a number of different types of bar graphs which can be used. These include:

the simple bar graph

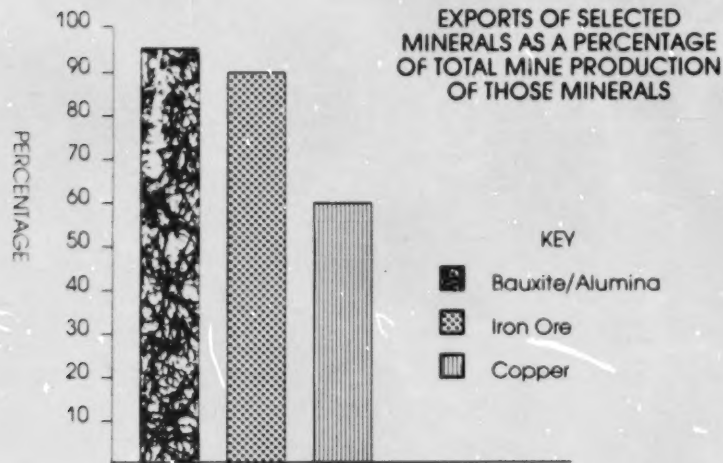
This shows movements or comparisons in one variable only. The bar may be the width of a single pencil line but it is usually more effective if it is thicker e.g. one centimetre.



Can you find more recent figures and add to this graph?

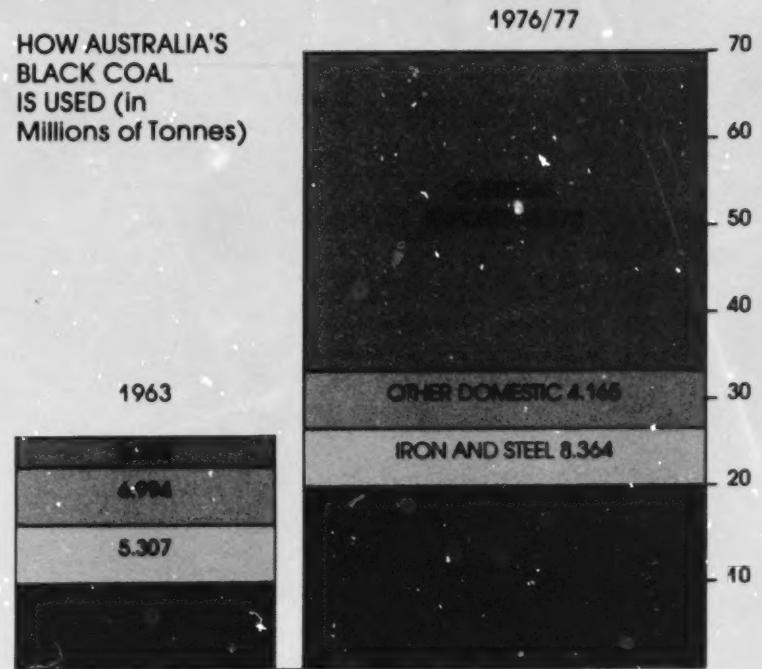
multiple bar graphs

These enable comparisons of more than one variable to be made at the same time. It is important not to overload the number of comparisons or the graph can be difficult to read. The bars referring to each different item or variable must be coloured or shaded differently and a key is needed to identify what they represent.



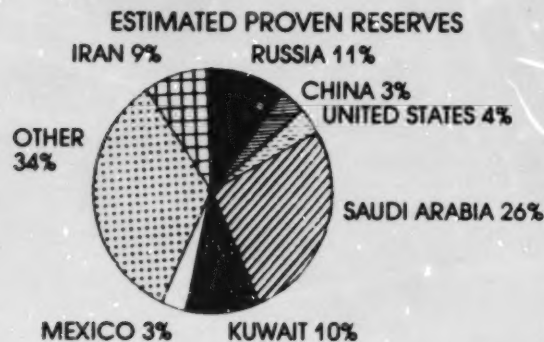
composite bar graphs

In these graphs the bars broken up into different segments which are coloured or shaded differently and often labelled. Usually the darkest shade is placed at the bottom of the composite bar. This type of bar requires a little more thought and work, but can be very effective as the example below indicates.



pie diagrams (pie graphs, sector graphs)

The pie diagram is constructed using segments to represent quantity and shows fractional parts of a whole. The construction of this diagram relies on knowing that the circle = $360^\circ = 100$ parts, therefore 1 segment is equal to 3.6° . Thus the pie diagram is very useful for showing proportions or percentages of a whole. The diagram below illustrates the percentages of the world's proven oil reserves held by various countries.



Too many divisions on a pie diagram can create visual confusion and if the segments are too small labelling is very difficult. However the value of this form of presentation can be seen by comparing the pie diagram and the table that are set out below. Although they deal with different subjects (i.e. average family spending in Great Britain 1971, and the way in which Australians as a whole spent their money in 1971/72,) both are illustrating parts of a whole. The pie diagram allows the reader to see at a glance the relative levels of expenditure.

Average weekly expenditure per family in Great Britain (1971)

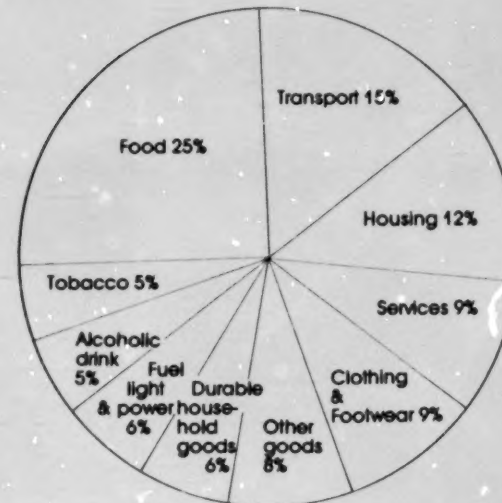


Table 5.1 Private final consumption expenditure, Australia, 1971 - 72

Item	Total (\$m)	(%)
Food	4 140	19.5
Cigarettes, tobacco, alcohol	2 011	9.4
Clothing & Footwear	1 922	9.0
Medical, hospital, chemist	1 602	7.5
Rent (incl. rent imputed on owner-occupied dwellings)	2 863	13.4
Gas, electricity, fuel	529	2.5
Household durables	1 569	7.4
Newspapers, books	350	1.6
Other goods	572	2.7
Travel & communication	3 162	14.8
Services (incl. education, entertainment)	2 605	12.3
Total	21 325	100.0

Source: Commonwealth Bureau of Census and Statistics, Australian National Accounts: National Income and Expenditure, 1971 - 72, Canberra, 1973, table 39.

Using the figures from the Table, construct a pie diagram to show how Australians spent their money in 1971/72. What comparisons can you make between the two diagrams?

PUTTING GRAPHIC SKILLS TO WORK

It is important to select a graphing method that is suitable for your data. The type finally selected will depend on the nature of the data and your aim — what it is that you want to emphasise, whether it is a direct comparison, whether it changes over time, or does it illustrate the relationships between parts of a whole. It is very important to carefully examine the data and work out what it **says** and what you **want to say** about it.

activities

- 1 Refer to the population figures of North West mining centres on page 23. It is obvious that a pie diagram would have been unsuitable for illustrating this information, however, it would be suitable for illustrating the information contained in the following table. Read the table carefully and then construct a pie diagram. Remember to label it carefully.

Dwellings	Mount Isa 1975
Private houses	75%
Flats	14%
Sheds or huts	8%
Staff barracks	3%

- 2 Using the following data, construct two different graphs to illustrate the information:

MOUNT ISA WORK FORCE — by industry			
Primary production	49	Transport and communications	337
Mining, quarrying	3887	Finance, property	137
Manufacturing	447	Commerce	741
Services	50	Public authority	87
Building construction	993	Defence	
Amusements	507	Community Business Services	
Other	136		

Total Work Force = 7846

Note: You will need to convert these figures to percentages. As such a diagram cannot be an accurate representation it would be wise to use round figures in your calculations.

- 3 Study the following set of figures compiled by 'Age Poll', 17 October, 1977 for the Victorian daily newspaper, **The Age**. They are the results of a national survey.

ATTITUDES TO THE MINING AND EXPORT OF URANIUM								
At the present time in Aust.	MEN	WO-MEN	18-20 year-olds	45-59 year-olds	ALP Voters	LIB Voters	Syd.	Melb.
Should mine and export uranium	57	49	35	60	32	77	56	45
Should not mine and export uranium	39	44	63	37	63	17	39	50
Don't know	4	7	2	3	5	6	5	5

This chart is another way of presenting data so that it can be readily understood. It is called a 'table' of data. It includes so many different categories that it would be very difficult to present the information in the form of statistical diagram.

4 Class exercise

Conduct a survey of various groups using the question, 'Should Australia mine and export uranium?' Different groups within your class could interview different groups of people. Possible groups would be junior class, senior class, boys, girls, teachers, parents. If, in some cases you may feel there would be problems in obtaining the information or in getting genuine information. Sometimes these problems can be overcome by using a duplicated survey question form or by asking the teacher of another class to procure the data for you.

5 Presenting Your Findings

Gather all the data. Decide what it is you wish to convey to the reader and then use the most appropriate method.

graphic skills can help to unify a presentation

Having learnt to use various ways of presenting information you are now in considerable danger of confusing your audience. If for instance, you were asked to present a comprehensive view of mining in Australia today you may well have gone to the trouble of using graphs, maps, charts, written paragraphs, and flow charts. If your work is to be really effective, it must convey a sense of purpose and an order of priority. Fortunately there are simple ways of unifying our material so it has a sense of direction. Even in a very short piece of work there should be this sense of direction.

Turn back to page 4 where there is a set of sub-headings for the topic 'Life in a modern mining town is very comfortable'. On one page of foolscap convey the message, as graphically as possible, using the sub-headings that you consider most appropriate.

Some hints . . .

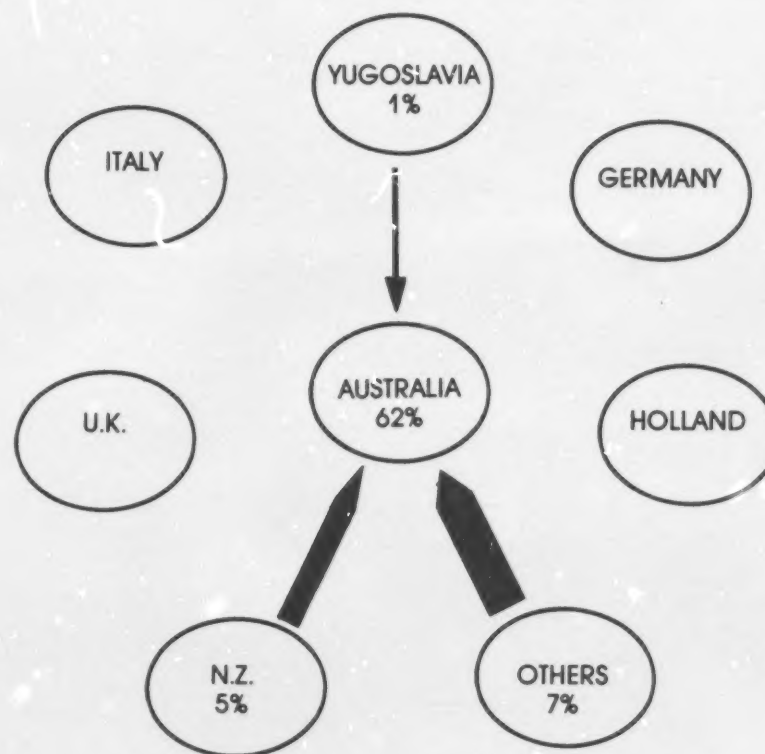
Use shapes and lines to draw your reader's attention from the information to the conclusion. Use words and/or symbols for your segments. What colours are most appropriate to suggest comfort? Don't worry if your page looks rather bare. We are only working on broad outlines at this stage.

- 6 Our aim is not always to present an accurate, detailed message. Very often, we simply wish to convey an impression of some idea or trend.

Read the following figures:

Hammersley Workforce in WA by Place of Birth		
Australia	2740	62%
UK	829	21%
NZ	204	5%
Germany	100	2%
Holland	56	1%
Yugoslavia	48	1%
Italy	26	1%
Others	271	7%
	<u>4274</u>	<u>100%</u>

Using the above figures copy the following diagram, filling in the items that are missing.



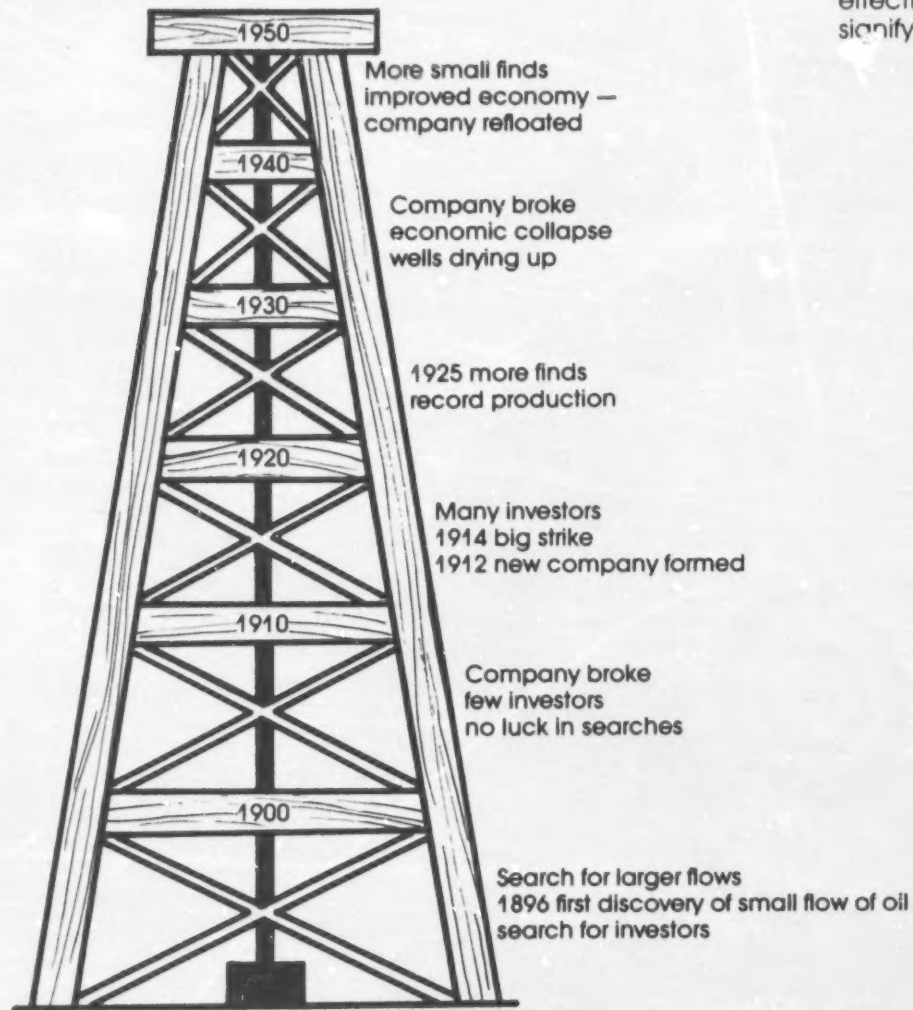
Produce another diagram that will give a more unified visual impression of the same information.

Hints: Are circles the most useful shapes? Would simplified map outlines be better? Is there some national symbol (e.g. flag, animal) that would serve as a useful shape, or as an image within the basic geometric shape? Can you make use of some image that represents an aspect of mining? Could the arrows be in the form of iron bars?

Display the finished product to see whether or not other students efforts manage to convey the message more effectively than yours.

- 7 You are often asked to take an historical approach to the study of a topic. Such an approach can lend itself well to a visual presentation. Consider the following information about an imaginary company called X.Y.Z. Company.

X.Y.Z. MINING COMPANY



Reproduce the time line colouring it appropriately. (The form of the oil derrick has really just enabled us to combine or unify two ideas — history and a mining method.) By choosing two colours, preferably cutouts of coloured paper shaped according to the sections of the derrick, you can convey periods of success or failure at a glance. What colour would best represent success? Failure? If your work is effective the viewers will want to know what the colours signify (i.e. they will want to look closer).

ORAL PRESENTATION

Have you considered that the best way of presenting your information may well be by word of mouth? Some topics lend themselves very well to such approaches as:

- a) oral explanation of written, tabulated, or graphically simplified material;
- b) recorded or simulated interview;
- c) drama or role play; i.e. the acting of a situation that reveals certain important points that your group wishes to make (e.g. family discussion of the role of the company in mining town life);
- d) debate (e.g. Should uranium be mined and exported? Does mining destroy the environment?).

In all of these approaches you should always ask yourself what you are trying to achieve. It is very easy to forget your objectives when you get involved in these activities. You should be particularly careful when using tape recordings; voices can be very boring, especially when you can't see the speaker.

If you are thinking of presenting information orally there are a number of techniques that will help attract and keep the attention of your **audience** and convey the **message**. You might use these guidelines as a checklist:

some points to note in giving talks

When giving talks you should:

- think carefully about the subject — it must be one which really interests you;
- gather, then sift the material;
- use interesting content;
- organise or structure your talk — introduction, body, conclusion;
- have a plan, writing down the main points as headings and subheadings;

- use the headings i.e. learn the ideas but do not attempt to memorise the speech — it must sound like somebody talking, not someone reading from notes;
- use supporting material (explanations, examples, comparisons, statistics for added interest, and where appropriate visual aids);
- try to have an interesting title and introduction and an effective conclusion;
- avoid 'er', 'um', — use thinking pauses instead;
- speak audibly and clearly;
- look at your audience;
- use suitable bodily actions to reinforce your ideas but remember that repose is appropriate on some occasions;
- vary the speed and volume to prevent monotony and to add emphasis.

some points to note when expressing opinions

When asked to express opinions you should:

- distinguish between fact and bias;
- organise your ideas well so that a central idea is supported by two or more main points;
- have an effective conclusion and, if appropriate, appeal to the audience;
- use vivid and persuasive language — concrete examples, questions, comparison and contrast, and humour;
- speak sincerely and forcefully;
- give thought to the title of your talk.

THREE-DIMENSIONAL PRESENTATION & DISPLAY TECHNIQUES

Perhaps you have already developed considerable skill in the construction of models. This type of three-dimensional presentation can also be a very effective and simple form of presenting information. The range and type of models that can be used is extensive and includes models of transport, different buildings and housing, models of villages or towns, and layouts of farms or mines.

It should also be remembered that a model does not necessarily have to be an exact replica. If you consider your message and your audience you may decide that a two-dimensional presentation with one part of it highlighted by a three-dimensional projection is the most effective means of achieving your aim. For instance, a flat wall chart of thick cardboard illustrating mining techniques might well be made more effective by the inclusion of a turning wheel fixed to the cardboard by a split pin. Likewise, a time-line can be made most effectively in the form of a turning wheel which has one open segment that exposes important dates and corresponding information. Such techniques can heighten the curiosity of the viewer.

Even display of your finished work can be varied to attract an audience. Consider the following ideas — and there are many more!

bulletin boards

Bulletin boards are inexpensive devices which communicate a great deal of information in a compact and attractive form. Begin the production with an idea. Select pictures and other materials which could be used to convey that idea. Finally, arrange these in a layout which communicates your idea clearly.

corrugated paper



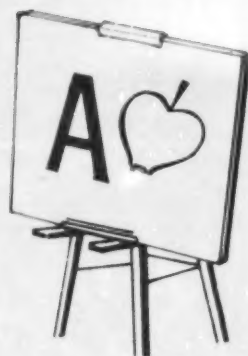
Display materials can be attached to a corrugated board, which will stand on a low shelf or cabinet, or hang over an unused blackboard or wall space.

temporary bulletin boards



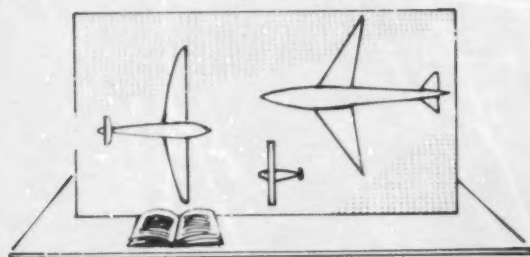
A wood-fibre panel set on the chalk tray or hung on the map rail or frame adds extra display space. Wallboard or similar panels may be painted, sprayed, or covered with paper.

easels



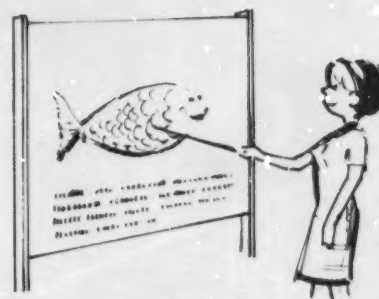
With fixed or folded legs as desired, movable easels multiply classroom display opportunities.

pegboards



Excellent display boards can be made by mounting pegboard panels on a suitable surface. Commercial hooks or home made devices can be used to fasten materials.

room dividers



By assembling panels on separate stands you can make bulletin boards that are useful for arranging work areas and also provide two sided displays.

HAVE YOU THOUGHT ABOUT —

some further mobile ideas

MOBILES

ANIMALS OF AFRICA

how do I liven
up a dull room?



I want to attract
attention



how can I
communicate
information in a
novel way?

can you make
a card or poster
come alive?

THE AIRPORT

Aerodrome

TARMAC

RUNWAY

Fire Tender

AMBULANCE

AEROPLANE

CONTROL TOWER

AIRCRAFT

Wind Sock

Radar

AIRLINER

Social Studies

Exports

Mineral

Agricultural



some points to remember

DISPLAY GUIDELINES

- good design is essential
- use a variety of materials
- intended audience must be attracted to and interested in display
- devices to attract attention are often useful
- easily identified themes gain attention and assist communication
- lots of ideas in the one display can produce a cluttered effect
- interested viewers often like to actively participate in a display
- printing and writing must be large enough to be easily read
- ease of communication is ensured by direct style and simple language
- position the display so that it can be easily seen and approached.

IN CONCLUSION

Whenever we put pen, or pencil or paint brush to paper, or open our mouths to speak, we are engaged in the process of communicating. Therefore we must all be involved in finding the most effective and appropriate **method** of conveying our **message** to our **audience**. The skills described in this booklet can help in this process, but it must be remembered that they are only a start and with practice they can be improved and built upon to assist you in effectively improving your presentation of information.

other useful publications

Visual Education Curriculum Project.

What a Picture! Learning from photographs.

Classroom Photography: Learning by making photographs.

See what I Mean! Learning through maps, charts and diagrams.

Just Imagine. . . Learning through mental imagery.

Pictures of Ideas: Learning through visual comparison and analysis.

Midweek Matinee: Considerations for learning from film and television.

Lights, Camera, Action. . . Learning by making films and videotapes.

Seeing and Drawing: Learning, thinking and communicating through drawing.

Curriculum Development Centre, Canberra, 1980-81.

Polkinghorne, K.B. **Geography Skills.** Rigby, 1981.

Breckon, C.J. **Presenting Statistical Diagrams.** Pitman, Melbourne, 1975.

Marr, G.E. **Introducing Graphical Communication.** John Wiley, 1976.

Connell W.F., Hoban C.A., & Koopman C.H. **Studying the Local Community.** Allen & Unwin (Aust), 1978.

Report on the Albury-Wodonga Regional Conference 1975. **Using Community Resources.** N.C.S.S.T., Canberra, 1978.